Management to prevent *Staphylococcus aureus* mastitis in small-scale dairy farms in Tanzania

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Presented at the International Dairy Federation World Dairy Summit
Cape Town, South Africa 4-8 November 2012

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Introduction

- Dairy production in TZ is dominated by small-scale farmers (herd size of 2-10 cows) on 0.5-2 hectares

- About 150,000 farmers own about 90% of the estimated 600,000 dairy cows in the country and produce more than 70% of milk marketed off-farm (NBS, 2003)
- Among the factors constraining productivity of smallholder dairying is udder health

Introduction..

- Incidence of subclinical mastitis on smallholder farms could be as high as 70% and clinical mastitis 2.0-2.8%
- Up to 63% of mastitis cases as detected by the California mastitis test (CMT) can be infectious form of mastitis caused by
  - *Staphylococcus aureus, Streptococcus* spp. (a*galactiae* and *dysagalactiae)* and
  - *Escherichia coli*
- Hence detection, management and control of infectious mastitis among smallholder dairy cattle is an important strategy for its control nationally

Study methodologies

- Most of the research reviewed has involved cross-sectional studies on prevalence, aetiology, predisposing or risk factors and trials on preventive management of mastitis in general and staphylococcal mastitis in particular

Risk factors to mastitis infection

WDS2012, South Africa: A world in one country

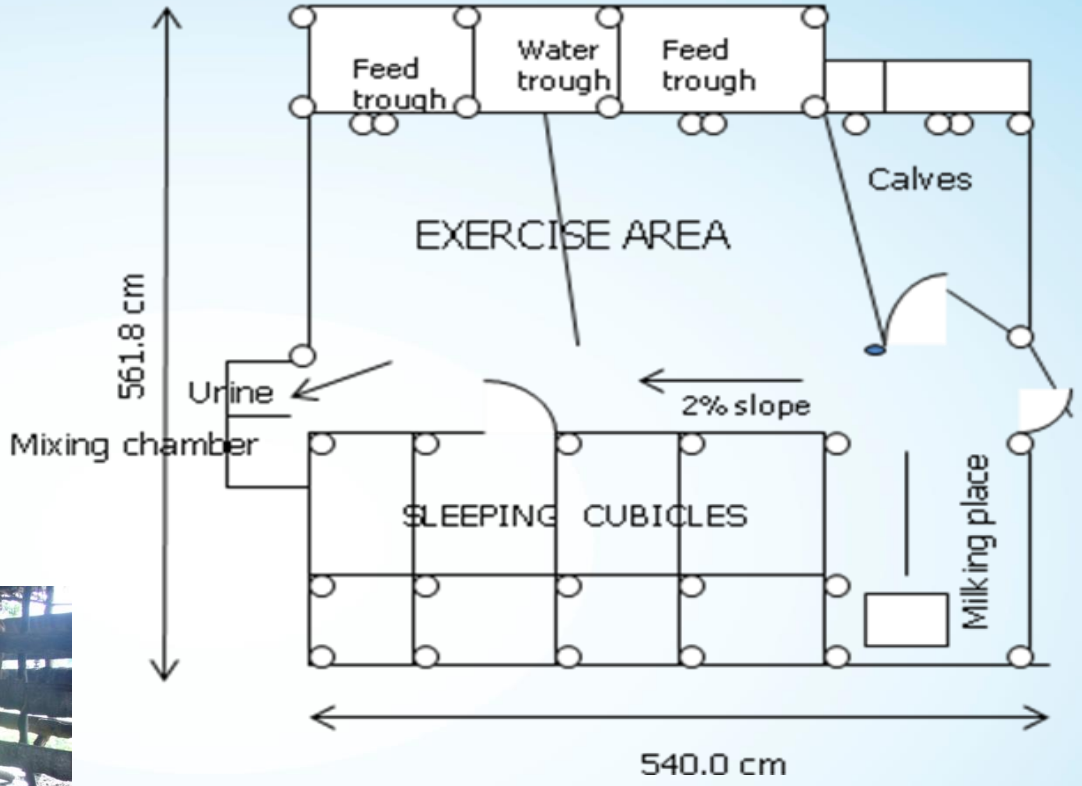
Hygienic milking and milking techniques

Practices that reduce mastitis infection	Extent of use by smallholder farmers	Author
Cleaning hands with detergents	<10%	Shem *et al,* 2001
Use disinfectant in udder wash	0%	Shem *et al,*2001
Drying udder with clean single cloth	0%	Mdegela *et al* , 2009
Dry hand milking (non use of lubricants)	0%	Mdegela *et al,* 2009
Complete milking	30%	Shem *et al* , 2001
Post milking teat dip	26.8	Mdegela *et al,* 2009
Dry cow theraphy	19.5%	Mdegela *et al,* 2009
Training on mastitis	rare	Karimuribo et *al,* 2006
Milking sick cows last	variable	

The housing environment

WDS2012, South Africa: A world in one country

- Zero grazing
- Tie stalls
  - Hygiene and manure and waste disposal most important



Adapted from CAMARTEC, Arusha , Tanzania

The housing environment

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- Free stalls
- Free grazing on pastures
  - Hygiene and manure and waste disposal most important
- Shem et al. (2001) found lower level of mastitis in zero grazed cattle than free pasture grazing

A= Dry cow therapy + full hygiene (pre-milking teat disinfection and post milking teat dip)
B= No dry cow therapy + full hygiene (pre-milking teat disinfection and post milking teat dip)
C= Dry cow therapy + routine hygiene (pre- milking teat disinfection only)
D=Control (No dry cow therapy + routine hygiene (pre-milking teat disinfection only)

Dry cow therapy as a preventive measure

Treatments by Shekimweri et al. (1998)

- A: Dry cow therapy + full hygiene (pre-milking teat udder wash + disinfection and post milking teat dip)
- B: No dry cow therapy + full hygiene (pre-milking udder wash + teat disinfection and post milking teat dip)
- C: Dry cow therapy + routine hygiene (pre- milking udder wash + teat disinfection only)
- D: Control routine hygiene (pre- milking teat disinfection only) (No dry cow therapy or post milking teat dip)

Dry cow therapy as a preventive measure

	Pre-treatment period (start of wk1)					After 8 weeks on treatment :					% reduction in incidence of isolates			
	A	B	C	D		A	B	C	D		A	B	C	D
CMT +	21	18	16	23		12	16	12	18		43	11	25	22
Infectious	12	9	11	5		4	3	3	5		67	67	25	0
Bacterial isolate														
Staphylococcus spp.	7	1	4	4		4	-	1	1		67	100	**75**	0
Streptococcus spp.	4	6	4	1		-	2	-	2		100	67	100	0
Escherichia coli	1	3	-	1		-	1	-	1		100	67	100	100
Others[a)]	-	1	1	-		-	-	-	1		100	100	100	50

Interventions to reduce mastitis

- Training in hygienic milking including udder wash and use of disinfectant such as hypochlorite at 80-100 ppm is basic requirement

Interventions to reduce mastitis …

Regular testing of animals by CMT and use of post-milking disinfectants by farmers

Sustainability

- Sustainability requires regular testing by extension services and training of farmers in dairy hygiene
- Providing incentives such as payment for milk on basis of quality including somatic cell counts

Conclusions

- Studies in Tanzania have showed that it is possible to reduce the incidences of mastitis caused by *S. aureus* on smallholder farms by adopting
    - Dry cow therapy combined with
        - Pre-milking udder wash
        - Regular use of post-milking teat dip with suitable disinfectant
- Sustainability can be ensured through regular testing and offering training of farmers and quality based incentives

Thank you for listening